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ABSTRACT

A model for the audiotutorial learning system was developed which consists of three stages. In the first stage, prelearning activities, the teacher and the learner communicate the goals, objectives, needs, expectations, and rationales for the learning. Also in this stage is a diagnosis-prescription test designed to structure and initiate the next stage, which is the learning activities. The middle stage, learning activities, is what is commonly meant by the audiotutorial method. Here tests are taken after each section, and the instructional process can be custom tailored by adding or subtracting units as needed. The third stage of the instructional system is the postlearning interaction. Another diagnosis-prescription test is given, and the learner and the system are evaluated. (WH)

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AN INSTRUCTIONAL SYSTEM

USING THE AUDIO-TUTORIAL IMPLEMENTATION METHOD

by

Robert Kirchherr

c.1974

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The Audio-Tutorial approach to learning is rapidly becoming the most widely used mediation system in education. It is difficult if not impossible to describe the similarity among all the Audio-Tutorial systems being developed and used. At times the only common factors are the prerecorded tape and the simulated tutorial patterns in the method of presentation. The tutorial simulation is the main intrest of this paper. The Audio-Tutorial method's reliance on and success through mediation will not be discussed.

The tutorial process implies a relationship between learner and teacher. A one to one relationship where the learner and teacher interact and the result of the interaction is an effect on both the people in the process and the material to be taught. The teacher and learner work together in determining the kindsof things to be learned and the method of presentation. In the Audio-Tutorial method of instruction learners are most often processed through a sequence of learnings while being allowed to vary the pace of learning. This tutotial process has meant a greater number of student successes. Doty[1] discusses many of the positive aspects of an Audio-Tutorial system for both learner and teacher. Postlethwait[2] also generalizes about the positive nature of Audio-Tutorial learning.

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The creation of the formal Audio-Tutorial system began with the work of S.N. Postlethwait in 1961. The conceptual framework of mediated tutorial instruction began earlier. In 1954 Norman Crowder[3] began developing a training system for bomber-navigation technicians. This United States Air Force project developed a tutor/simulator design for instruction. Each trainee had access to a film projector, bomber/navigator simulator and a series of response buttons. The trainee was presented with a problem about the bomber/navigation device and allowed to use the simulator. He then indicated his answer to the problem by pushing one of the response buttons. If the correct button was pushed the program moved on to the next piece of information. If an incorrect response was made additional instruction was provided and a retest given. The important feature of this system was the feedback loop between the trainee and the material being presented. The interactive process was the controling factor in the design of the instructional process. The sequence of material and the material itself were designed to meet the learning needs of the trainee. The ability to alter both content and sequence is a major difference between the Crowder system and most of the present Audio-Tutorial programs.

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Current Audio-Tutorial instructional systems have placed a strong emphasis on the self-paced nature of information presentation within the instructional process. The lineal pattern of material presentation has remained however, inherent in this kind of course development. Attempts to alter the lineal pattern have resulted in the development of the Minicourse concept.[4] In addition criteria reference tests were written for some Audio-Tutorial units of study. Minimum thresholds of acceptable performance were standardized and in many cases a lineal system developed within the Audio-Tutorial method. Passing from one instructional unit to another was dependent upon meeting the minimum threshold on the criterion reference test. Pass the test and move on, fail and remedial help was given. This system of minicourses developed, through the organization of materials, into a lineal system of study. At times a supermarket selection of minicourses was offered. This selection scheme cannot work if the objectives of the semester's work involve a highly coordinated system of skills and knowlege. Audio-Tutorial models seem to involve either passing through a series of sequenced information units or passing among uncoordinated information units. These alternatives do not use the Audio-Tutorial system to its fullest potential.

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The Audio-Tutorial implementation method being suggested could offer both teachers and learners an instructional system with a variety of information storage, retrieval and presentation alternatives. This instructional system could be developed using already available tools. The instructional process in this suggested system is divided into three major parts: Prelearning Interactions, Learning Activities, and the Postlearning Interactions. (see figure 1)

In the first of these major divisions, the Prelearning Interactions, the teacher and learner communicate to each other. The teacher outlines the goals, objectives and rationales for the learnings. The learner articulates personal needs and expectations of the learnings. Before instruction begins than the teacher and learner have the chance to evaluate each others expectations and commitments. After this initial interaction a decision must be made by both teacher and learner. They must both decide to commit themselves to the learnings. If a commitment cannot be agreed upon then both teacher and learner have saved instructional time. If the commitment is made however the second part of the Prelearning interaction occurs. A diagnosis-prescription[5] test is given to the learner. This test would relate directly to the desired learnings. It would act as a structuring device for units of material. The test

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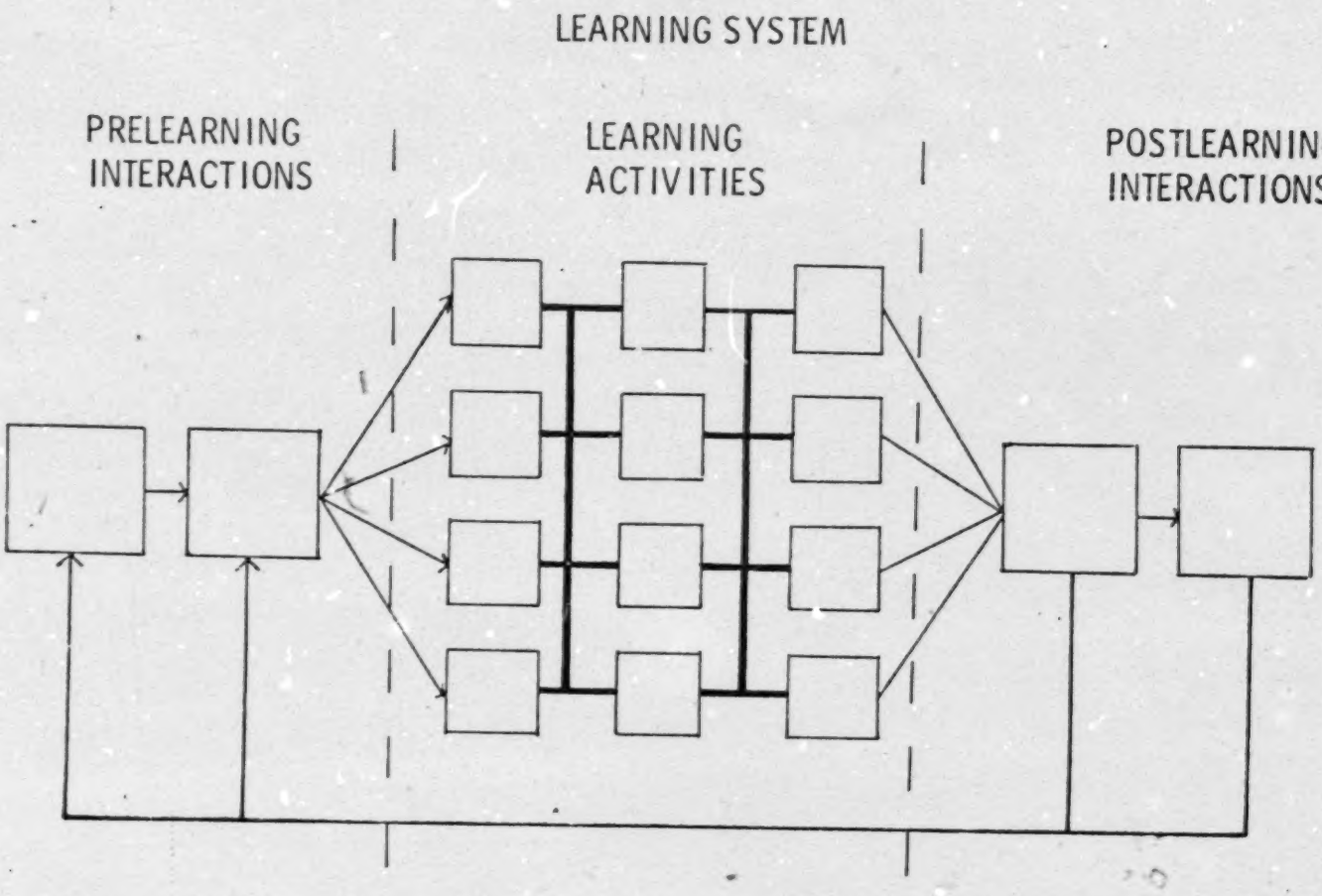
Figure 1



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would prescribe Audio-Tutorial packages that when combined would achieve the desired goals for a specific learner. With the completion of the learning package selection the first major division, Prelearning interaction, is complete.

The second major section of the instructional process is the Learning Activities area. In this section the Audio-Tutorial method acts as an information retrieval system and presentation method. The Diagnosis-Prescription test in the Prelearning Interaction established which Audio-Tutorial information units must be presented to the learner so the desired goals are met. By testing at the end of each Audio-Tutorial unit subsequent units could be replaced, omitted or expanded depending on the needs of the learner. The multiplicity of units become a resource for instruction. There is a definate similarity between this conceptualization of Audio-Tutorial units as a number of possible alternatives and the way a branching program is written. In both learnings are selected and sequenced by the learner. The tutorial nature of this system seems more fully realized.

The idea of custom tailoring Audio-Tutorial Units is not new. Postlethwait, Novak and Murray in "The Audio-Tutorial Approach to Learning" state "... a good educational vehicle should permit the learner to adjust the amount of repetition

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to his individual needs". Alan Hofmeister in "Audio-Tutorial Programming with Exceptional Children" devised a system of catagories and performance standards. Each catagory related to an Audio-Tutorial unit on a cassette. Students were evaluated and placed in the catagories that contained material best suited to their abilities. The students were fit into the lesson scheme. In both of these examples feedback from the student influenced the Audio-Tutorial package.

The third major part of the instructional system is the Postlearning Interaction. In this section again the teacher and learner meet to talk about the material learned. A teacher would give another diagnosis-prescription test. This time the test would relate directly to the objectives of the entire sequence of learnings. The learnings being presented through Audio-Tutorial packages. The nature of the exam would indicate to the teacher both where the learner needs additional help and where the Audio-Tutorial materials need revision. Therefore there would be two subdivisions in the section. The learner evaluation and the system evaluation. The result of the evaluation leading to learner or system rework.

My purpose in this presentation has been to develop a system of instruction using the Audio-Tutorial implementation

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method. I have tried to develop this system so the simulated tutorial patterns used in the Audio-Tutorial method could be maximized. This is done through feedback loops in the prelearning,learning and post learning periods of instruction. Teacher and student work together in the implementation of the instructional program. The Audio-Tutorial method provides the flexible means to achieve a true tutorial system.

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FOOTNOTES

1. Robert B. Doty, "Student Reaction to the A-T Approach", Personalized Laboratory Instruction in Microbiology: The Audio-Tutorial Approach, Educational Technology, Volume XIV Number 1, January 1974, p38
2. S.N. Postlethwait and Robert N. Hurst,"Some Advantages and Disadvantages", The Audio-Tutorial System:Incorporating Minicourses and Mastery, Educational Technology, Volume XII Number 9, September 1972,
3. Derek Rowntree, "How Branching Began", Basically Branching, London, MacDonald, 1966, pp5&6
4. S.N. Postlethwait, Minicourses and Mastery
5. Ronald Besel,"Educational Diagnosis-Prescription in Perspective", Diagnosis-Prescription in the Context of Instructional Management, Educational Technology, Volume XIII, Number 7, July 1973, p26

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